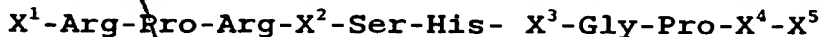


CLAIMS

1. A peptide represented by the formula:



5 [wherein X^1 represents a hydrogen atom or an amino acid residue comprising 1 to 25 amino acids each of which, whether identical or not, has a side chain which may be substituted, or a peptide chain; X^2 represents a neutral amino acid residue having a side chain which may be substituted; X^3 represents a neutral amino acid residue having a side chain which may be substituted, an aromatic amino acid residue having a side chain which may be substituted or a basic amino acid residue having a side chain which may be substituted; X^4 represents a bond or a neutral or aromatic amino acid residue having a side chain which may be substituted; X^5 represents ① an amino acid residue having a side chain which may be substituted or an amino acid derivative with the C-terminal carboxyl group reduced to a hydroxymethyl group or a formyl group, ② a hydroxyl group or ③ a dipeptide chain comprising an amino acid residue having a side chain which may be substituted and an amino acid residue having a side chain which may be substituted, bound together, or a peptide derivative with the C-terminal carboxyl group reduced to a hydroxymethyl group or a formyl group; and a side chain in each amino acid residue in -Arg-Pro-Arg-, -Ser-His- or -Gly-Pro- in the formula may be substituted; except the case where X^2 represents Leu, X^3 represents Lys, X^4 represents Met, X^5 represents ① Pro or ② Pro-Phe, and -Arg-Pro-Arg- in the formula represents unsubstituted -Arg-Pro-Arg-, -Ser-His- represents unsubstituted -Ser-His-, and -Gly-Pro- represents unsubstituted -Gly-Pro-], or an ester thereof, or a salt thereof.

2. A peptide, as claimed in claim 1, wherein X^1 is an amino acid residue having a side chain which may be substituted, or an ester thereof or a salt thereof.

35 3. A peptide as claimed in claim 1, wherein X^1 is pGlu which may be substituted or Gln having a side chain which may be

substituted, or an ester thereof or a salt thereof.

4. A peptide as claimed in claim 1, wherein X^1 is represented by the formula Y^1-Y^2 (wherein Y^1 represents an amino acid residue comprising 1 to 17 amino acids each of which, whether identical or not, has a side chain which may be substituted, or a peptide chain, and Y^2 represents an amino acid residue comprising 1 to 8 amino acids each of which, whether identical or not, has a side chain which may be substituted, or a peptide chain), or an ester thereof or a salt thereof.

5. A peptide as claimed in claim 4, wherein Y^2 is a peptide chain represented by ① the formula $B^1-B^2-B^3-B^4-B^5-B^6-B^7-B^8$ (wherein each of B^1 through B^8 , whether identical or not, represents an amino acid residue having a side chain which may be substituted), ② the formula $B^2-B^3-B^4-B^5-B^6-B^7-B^8$ (wherein the symbols have the same definitions as those given above), ③ the formula $B^3-B^4-B^5-B^6-B^7-B^8$ (wherein the symbols have the same definitions as those given above), ④ the formula $B^4-B^5-B^6-B^7-B^8$ (wherein the symbols have the same definitions as those given above), ⑤ the formula $B^5-B^6-B^7-B^8$ (wherein the symbols have the same definitions as those given above), ⑥ the formula $B^6-B^7-B^8$ (wherein the symbols have the same definitions as those given above), ⑦ the formula B^7-B^8 , (wherein the symbols have the same definitions as those given above), or ⑧ the formula B^8 (wherein B^8 has the same definition as that given above), or an ester thereof or a salt thereof.

6. A peptide as claimed in claim 5, wherein B^1 is a neutral amino acid residue having a side chain which may be substituted, or an ester thereof or a salt thereof.

7. A peptide as claimed in claim 6, wherein B^1 is Gly which may be substituted, or an ester thereof or a salt thereof.

8. A peptide as claimed in claim 5, wherein each of B^2 , B^3 and B^4 , whether identical or not, is a basic amino acid residue having a side chain which may be substituted, or an ester thereof or a salt thereof.

9. A peptide as claimed in claim 5, wherein B^5 is an amino acid residue having an aromatic side chain, or an ester thereof or

00707558 0220004

Sub
a2

a salt thereof.

10. A peptide as claimed in claim 5, wherein each of B⁶ and B⁷, whether identical or not, is a basic amino acid residue having a side chain which may be substituted, or an ester thereof or a salt thereof.

11. A peptide as claimed in claim 5, wherein B⁸ is Gln having a side chain which may be substituted, or an ester thereof or a salt thereof.

12. A peptide as claimed in claim 4, wherein Y¹ is an amino acid residue or peptide chain represented by (a) the formula A¹-A²-A³-A⁴-A⁵-A⁶-A⁷-A⁸-A⁹-A¹⁰-A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein each of A¹ to A¹⁷, whether identical or not, represents an amino acid residue having a side chain which may be substituted), (b) the formula A²-A³-A⁴-A⁵-A⁶-A⁷-A⁸-A⁹-A¹⁰-A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein the symbols have the same definitions as those given above), (c) the formula A³-A⁴-A⁵-A⁶-A⁷-A⁸-A⁹-A¹⁰-A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein the symbols have the same definitions as those given above), (d) the formula A⁴-A⁵-A⁶-A⁷-A⁸-A⁹-A¹⁰-A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein the symbols have the same definitions as those given above), (e) the formula A⁵-A⁶-A⁷-A⁸-A⁹-A¹⁰-A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein each symbols have the same definitions as those given above), (f) the formula A⁶-A⁷-A⁸-A⁹-A¹⁰-A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein the symbols have the same definitions as those given above), (g) the formula A⁷-A⁸-A⁹-A¹⁰-A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein the symbols have the same definitions as those given above), (h) the formula A⁸-A⁹-A¹⁰-A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein the symbols have the same definitions as those given above), (i) the formula A⁹-A¹⁰-A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein the symbols have the same definitions as those given above), (j) the formula A¹⁰-A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein the symbols have the same definitions as those given above), (k) the formula A¹¹-A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein the symbols have the same definitions as those given above), (l) the formula A¹²-A¹³-A¹⁴-A¹⁵-A¹⁶-A¹⁷ (wherein the symbols have the same

but a2
 definitions as those given above), (m) the formula $A^{13}-A^{14}-A^{15}-A^{16}-A^{17}$ (wherein the symbols have the same definitions as those given above), (n) the formula $A^{14}-A^{15}-A^{16}-A^{17}$ (wherein the symbols have the same definitions as those given above),
 5 (o) the formula $A^{15}-A^{16}-A^{17}$ (wherein the symbols have the same definitions as those given above), (p) the formula $A^{16}-A^{17}$ (wherein the symbols have the same definitions as those given above), or (q) A^{17} (wherein A^{17} has the same definition as that given above), or an ester thereof or a salt thereof.

10 13. An amino acid residue or peptide as claimed in claim 12, wherein A^1 is an amino acid residue having an aromatic side chain, or an ester thereof or a salt thereof.

15 14. A peptide as claimed in claim 12, wherein A^2 and A^3 are neutral amino acid residues having a side chain which may be substituted, or an ester thereof or a salt thereof.

15 15. A peptide as claimed in claim 12, wherein A^4 is a neutral or a basic L-amino acid residue having a side chain which may be substituted, or an ester thereof or a salt thereof.

20 16. A peptide as claimed in claim 12, wherein A^5 is Pro having a side chain which may be substituted, or an ester thereof or a salt thereof.

25 17. A peptide as claimed in claim 12, wherein each of A^6 and A^9 , whether identical or not, is a basic amino acid residue having a side chain which may be substituted, or an ester thereof or a salt thereof.

30 18. A peptide as claimed in claim 12, wherein each of A^7 and A^{10} , whether identical or not, is an amino acid residue having a hydroxy group in a side chain thereof or a neutral amino acid residue having a side chain which may be substituted, or an ester thereof or a salt thereof.

19. A peptide as claimed in claim 12, wherein A^8 is an amino acid residue having a hydroxy group in a side chain thereof, or an ester thereof or a salt thereof.

35 20. A peptide as claimed in claim 12, wherein A^8 is Ser, Pro or Hyp, or an ester thereof or a salt thereof.

21. A peptide as claimed in claim 12, wherein A^{10} is an amino

acid residue having a hydroxy group in a side chain thereof, or an ester thereof or a salt thereof.

22. A peptide as claimed in claim 12, wherein A¹¹ through A¹⁴, whether identical or not, is a neutral amino acid residue having a side chain which may be substituted, or an ester thereof or a salt thereof.

23. A peptide as claimed in claim 12, wherein A¹⁵ is an amino acid residue having an aromatic side chain, or an ester thereof or a salt thereof.

24. A peptide as claimed in claim 23, wherein A¹⁵ is Trp, or an ester thereof or a salt thereof.

25. An amino acid residue or peptide as claimed in claim 12, wherein each of A¹⁶ and A¹⁷, whether identical or not, represents a neutral amino acid residue having a side chain which may be substituted, or an ester thereof or a salt thereof.

26. A pharmaceutical containing a peptide, as claimed in claim 1, or an ester thereof or a salt thereof.

27. A pharmaceutical as claimed in claim 26 which is a central nervous function regulator, a circulatory function regulator, a cardiac function regulator, an immune function regulator, a digestive function regulator, a metabolic function regulator or a reproductive organ function regulator.

28. A pharmaceutical as claimed in claim 26 which is an agonist of a protein containing an amino acid sequence shown by Sequence ID No.: 26 or a salt thereof.

Sub
a2

007858-03004